

# Analysis of Two Different Span Skew Slab Bridge using ETAB Software by Finite Element Method

MD Dilnawaz Alam<sup>1</sup>, Prof. Imran Ahmad Faizy<sup>2</sup>

<sup>1</sup>M Tech Scholar, <sup>2</sup>Professor,

<sup>1,2</sup>Department of Civil Engineering, Millennium Institute of Technology & Science, Bhopal, Madhya Pradesh, India

## ABSTRACT

- Skewed bridges are commonly used to cross roadways, waterways, or railways that are not perpendicular to the bridge at the intersection. Skewed bridges are characterized by their skew angle, defined as the angle between a line normal to the centerline of the bridge.
- In this Project work, Study the behaviour of skew slab bridges in context of lateral load distribution, skew angle effect and bending moment/ coefficient and deflection determination by ETAB Software using finite element method.

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## INTRODUCTION

Bridge is an important structure required for the transportation network. Now a day with the fast innovation in technology the conventional bridges have been replaced by the cost effective structured system. For analysis and design of these bridges the most efficient methods are available. Different methods which can be used for analysis and design are AASHTO, Finite element method, Grillage and Finite strip method.

## OBJECTIVES

- To Analysis of two different Span Skew Slab Bridge Using ETAB Software by Finite Element Method.

## METHODOLOGY

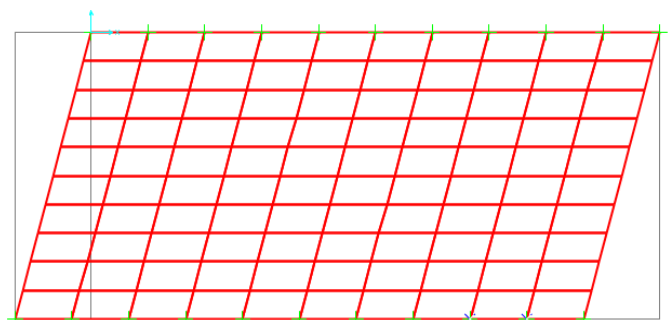
In this research work, we have used ETAB software which is based on the application of Finite Element Method. This software is a widely used in the field of structural design and analysis. Now a day this software is very much friendly for the analysis of different type of structures and to calculate the result at every node & element wise. Analysis of two

different Span Skew Slab Bridge Using ETAB Software by Finite Element Method.

**Table no 1 Geometric Properties of Skew Slab Bridge**

S. No	Skew Slab Bridge	span length in meter	skew angle
1	Case I	16	15°
2	Case II	20	15°

Step-1 Preparation of geometry of tower in ETABS



**Fig 1 Top View slab with 16m span length at 15° skew angle**

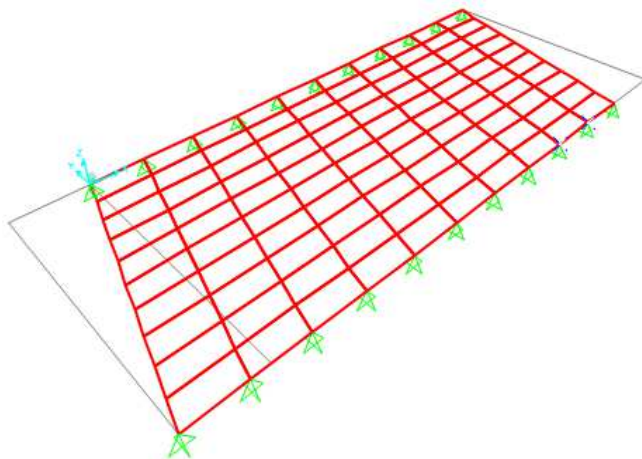


Fig 2 3D View slab with 16m span length at 15° skew angle

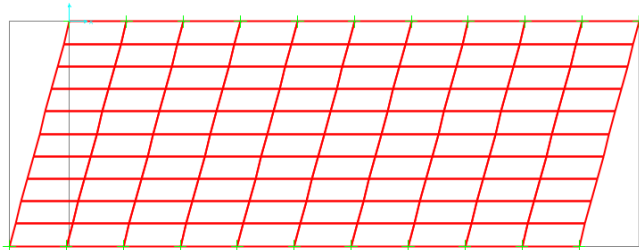


Fig 3 Top View slab with 20m span length at 15° skew angle

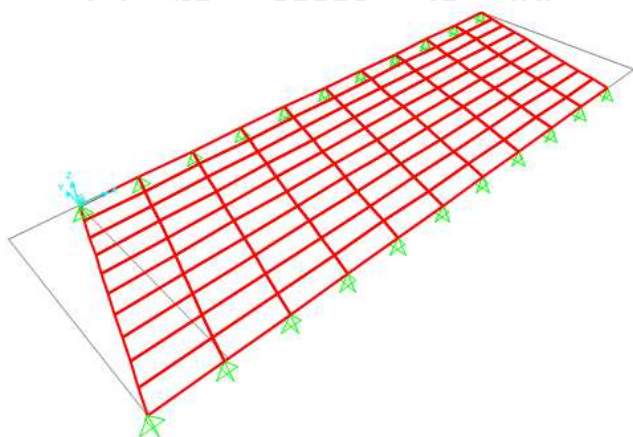


Fig 4 3D View slab with 20m span length at 15° skew angle

Results

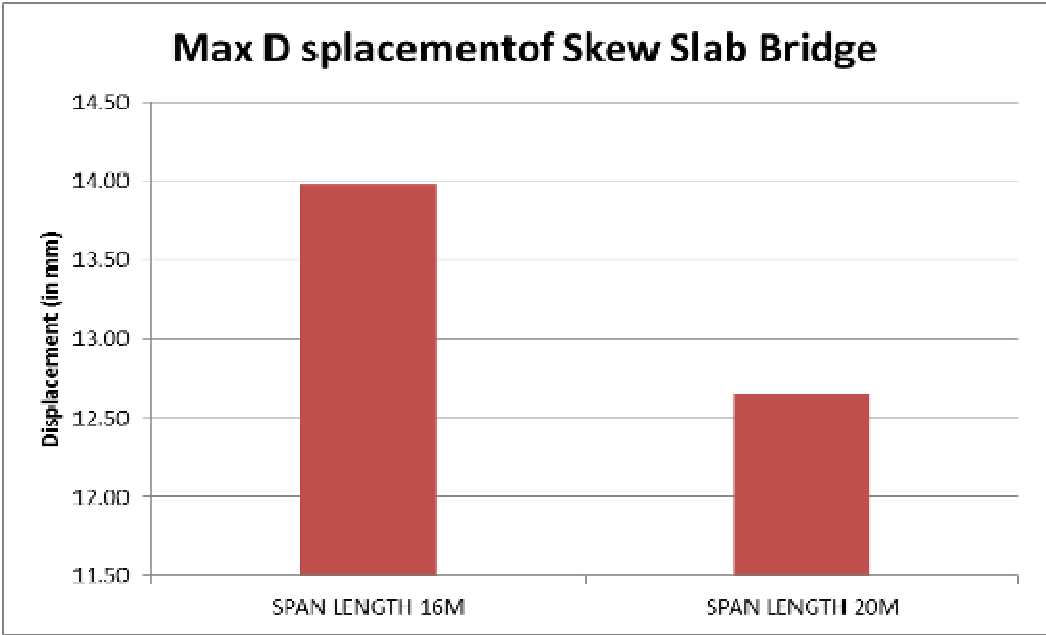


Figure 5 Maximum Displacement Graph

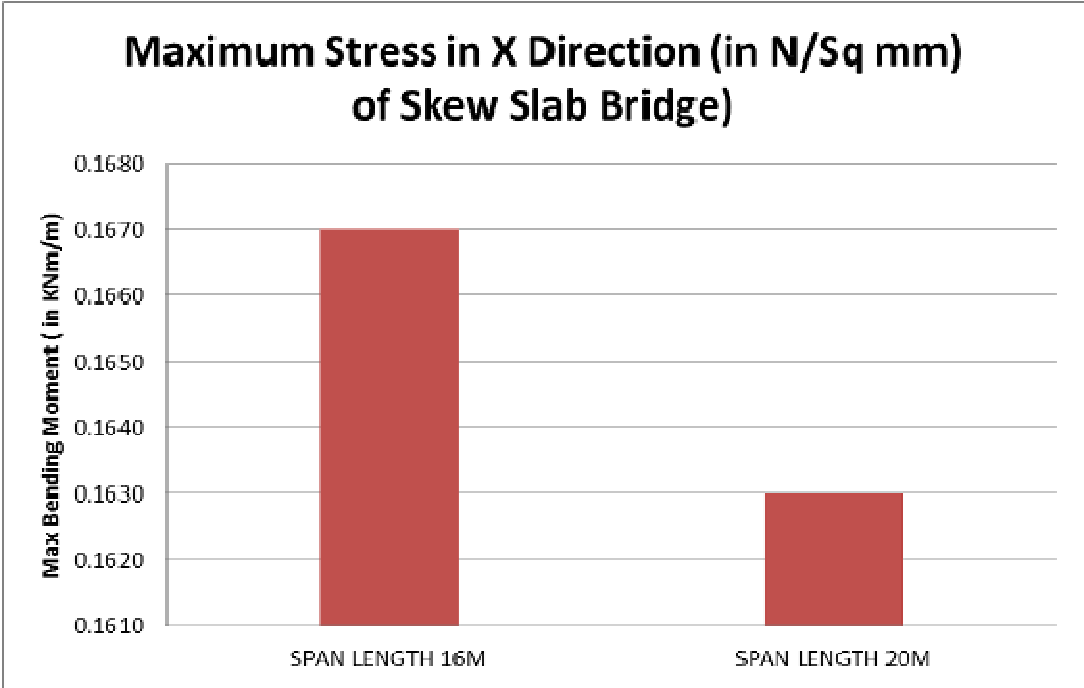


Figure 6 Maximum Stress Qx Graph

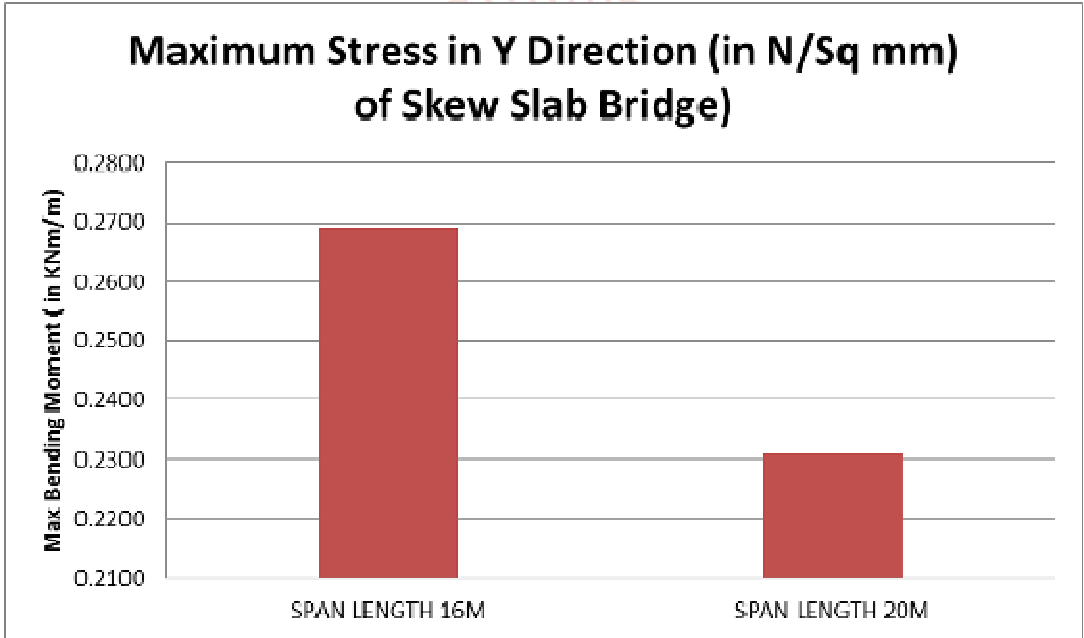


Figure 7 Maximum Stress Qy Graph

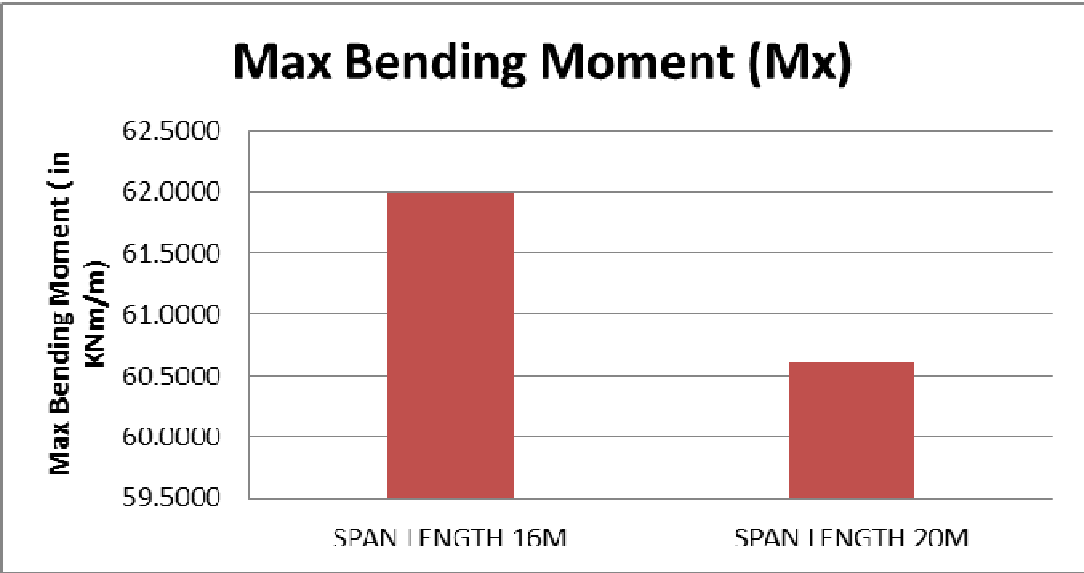


Figure 8 Maximum Bending Moment Mx Graph

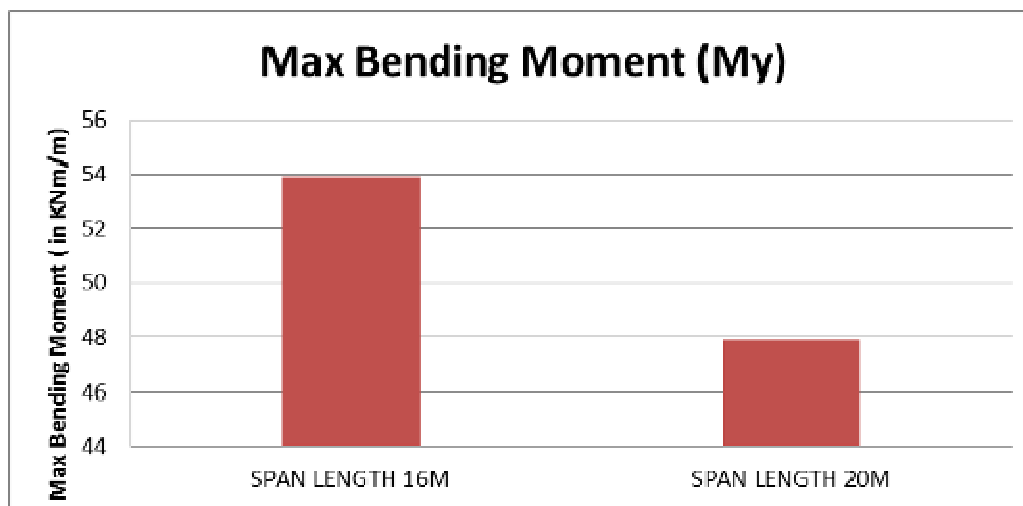


Figure 9 Maximum Bending Moment My Graph

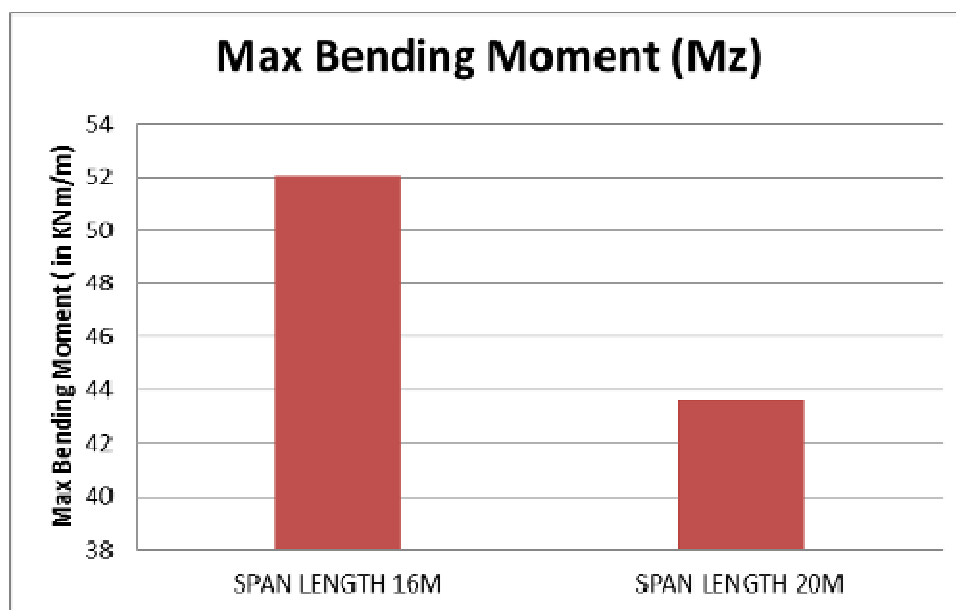


Figure 10 Maximum Bending Moment Mz Graph

## ➤ CONCLUSION

When span is increases than Max Bending Moment in X Direction ( in KNm/m) of Skew Slab Bridge is decreases from 61.9940 to 60.6140 and Max Bending Moment in Y Direction ( in KNm/m) of Skew Slab Bridge Decreases 53.916 to 47.890 and Max Bending Moment in Z Direction ( in KNm/m) of Skew Slab Bridge Decreases 52.07 to 43.6748. Hence higher span of bridge is considered.

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